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sine of half the vertical angle is to the sine of half the difference of the angles at the base.

12. Prove that the base of a plain triangle is to the difference of the sides, as the cosine of half the vertical angle is to the sine of half the difference of the angles at the base.

Resolve the following equations:—

13. $\frac{3x^2-8x+2}{x-3}=\frac{6x^2+13x-4.}{2x}$

14. $x=a+\sqrt{(3x^2-4a^2)}$.

15. $x-y=a$, and $x^3-y^3=b$.

16. $\frac{3x^2-11x+2}{x-2}=\frac{6x^2-24x.}{2x-5.}$

On the Senior Mathematical Course.

1. Prove that
$\cos A=\frac{1}{2}\sqrt{(1+\text{sine } 2A.)}+\frac{1}{2}\sqrt{(1 \text{ sine } 2A)}$

2. Prove that $\frac{\sin A+\sin B}{\cos B+\cos B}=\tan\frac{1}{2}(A+B)$

3. Prove that $4\cos A^3=\cos 3A+3\cos A$.

4. In a plain triangle, prove from the formula $\cos A=\frac{b^2+c^2-a^2,}{2bc}$ that the area is equal to $\sqrt{s.(s-a).(s-b).(s-c)}$, where $s=\frac{1}{2}(a+b+c.)$

5. In a spherical triangle, prove that the sines of the sides are proportional to the sines of the opposite angles, from the fundamental formula, $\cos a=\cos A \sin b \sin c + \cos b \cos c$.

6. Given the sun's declination at a given hour, on a given day, to find the latitude.

7. What two places on the tropic of Cancer are each 5,000 miles distant from Belfast?

8. Trace the mutations in the signs of the chord of a variable circular arc.

9. If two sides of a spherical triangle be each 45°, the cosine of the remaining side is equal to the square of the cosine of half the opposite angle.

10. If two angles of a spherical triangle be each 45°, the square of the cosine of half the remaining angle is equal to half the square of the cosine of half its opposite side.

11. In a right angled, isosceles, spherical triangle, the sine of one of the equal angles is to the sine of 45°, as the radius is to the cosine of half the hypotenuse.

12. To investigate the mode of finding the latitude and longitude of any of the heavenly bodies from its right ascension and declination; and conversely.

13. Given the latitude and longitude, or the right ascension and declination of two stars, to find their distance asunder.

14. Given the distances of a comet from two known stars; *to find* its latitude, longitude, right ascension, and declination.

15. Find the differential of $(a+x)^x$

16. Find the integral of $dx.\frac{x^4+a^4}{x+a}$;

17. Find the equation of the parabola, the focus being origin.

18. Find the subtangent of the hyperbola.

19. Find the subtangent of the curve whose equation is $x^2 y = a^3$

20. Find the area of the same curve.

We regret that our limits do not allow us to notice the subjects prescribed for premiums, and the other proceedings of the Meeting, which must be interesting to all who observe the progress of literary institutions in this country; but we shall perhaps give some further particulars in our next Number.

AGRICUTURAL REPORT, FOR APRIL.

THE oldest inhabitant of this country, does not recollect a more favourable seed-time than that which we have experienced this year. The oats were all committed to earth in good time, and under the most promising circumstances. Nothing can be more delightful than the appearance of the country, since the late refreshing showers. Wheats are covering the ground with vigorous shoots; clovers and grasses are early and promising beyond precedent; and the culture of potatoes is more advanced than we recollect ever to have seen it at so early a period. We recommend an article on *Potatoe Culture*, in our present Number, to the serious perusal of our agricultural friends. It is written by an experienced and most intelligent farmer; and we are persuaded, from our own knowledge, and from extensive inquiries, that his remarks are well founded. In addition to his observations, we would recommend the trial of an experiment which is said to have succeeded very remarkably in Scotland, viz. " Planting the *rose-end* of *middle-sized* Potatoes, at the distance of 9 or 10 inches, between each seed, in the drill." About *one-third* of the potato should be planted, without being farther cut. It is said that this mode will yield a larger and better crop, than any other; and also, that wherever it is pursued, *curled* stalks are very rarely to be found.

Z.

Finlay, Printer, Belfast.